Position Description

Labor Category/FLSA: Nonexempt

_____ **Current or** __X__ **Proposed Specific Description**

Date Prepared: 07/03/03

Approving Official: **Name:** H. Paul Busch **Signature:** H. Paul Busch
Title: HR Specialist

Position Title/Series/Grade: High Voltage Electrician, WG-2810-11

References: FWS Job Grading Standard for High Voltage Electrician, 2810, dated May 1995

Title and Series Determination: The incumbent works at and above the journeyman level applying proper work methods to accomplish assigned tasks. Also, he/she ensures availability of necessary materials, tools, and technical instructions. Some work is performed in high voltage electric vaults, substations, and on underground and overhead high voltage distribution systems. Installs, tests, repairs, and maintains generators, transformers, relays, regulators, switches, circuit breakers, recording instruments, control systems and other circuit elements. Also, conducts repairs and maintenance on asynchronous and induction motors, motor generators, protective relays, high voltage circuit breakers, telemetering equipment, rigid conduits, and conductors. Incumbent repairs electrical auxiliary equipment in the boiler, refrigeration and incinerator plants. The performance of these duties and the knowledge and skill necessary is illustrative of those detailed in the referenced standard. The title dictated by the standard at this grade is High Voltage Electrician.

Grade Level Determination: The incumbent exercises unusual skill, knowledge and judgement to successfully perform these duties. The responsibility and complexity of this position is uncommon. The circumstances surrounding NIH's electrical requirements are complex, unique and critical and are not found at any grade level in the standard. The physical effort required and the working conditions *are* found at the grade 10 level. However, the standard does allow assignment to grades above or below the levels described due to substantial differences in skill, knowledge and responsibility from those described in the standard and based upon sound job grading methods. In duties, skills, knowledge and responsibility, the position exceeds grading criteria for grade level 10 listed in the standard. This justifies the proper classification as High Voltage Electrician, WG-2810-11.

High Voltage Electrician
WG- 2810 - 11

Introductory Statement:

The Division of Property Management (DPM) serves all of the NIH Community by providing support for renovations, new construction and maintenance of existing facilities, utilities and grounds. The Division provides professional leadership for the engineering programs of the National Institutes of Health (NIH). The scope of DPM operations is such that the effectiveness with which they are carried out has a major and direct effect on the worldwide biomedical research programs of the NIH. In addition to the main facilities at the Bethesda Campus and in Poolesville, MD, NIH has facilities at Research Triangle Park, North Carolina, Rocky Mountain Laboratory in Montana and the Gerontology Research Center in Baltimore, MD.

This position is organizationally located within the DPM in one or more of the subordinate organizational components responsible for the provision of operations and maintenance of NIH facilities. The position requires the incumbent to be flexible in the types and complexity of work performed. The position requires that the incumbent be able to work independently and take the initiative to complete the work assigned with a minimum of direct supervision regardless of the nature of the work thus requiring that specific trade skills be shared between staff members.

Major Duties and Responsibilities:

Works above the full journeyman level and is able to use the proper work methods involved in accomplishing an assigned task. Makes sure that necessary materials, technical instructions and tools are available to accomplish the task. Obtains required information or decisions from the supervisor on problems that come up during planning or performance of the work. Works with complete knowledge of the NIH high voltage electrical systems and is able to apply proper procedures, policies, written instructions and other directives in completing an assigned task. Incumbent installs, tests, repairs and maintains generators, transformers, relays, regulators, switches, circuit breakers, recording instruments, control systems and other circuit elements. Works in high voltage electric vaults and substations, and on underground and overhead high voltage primary distribution systems.

Incumbent dismantles, repairs and assembles asynchronous and induction motors, motor generators, protective relays, network protectors and high voltage circuit breakers. Installs, alters, replaces distribution equipment in transformer vaults and substations. Cleans, adjusts, and repairs electrical equipment such as air circuit breakers and remotely controlled supervisory and telemetering equipment. Installs rigid conduits. Pulls in conductors, assembles bus bars, phases out and connects conductors. Troubleshoots distribution circuits and controlling equipment to locate and correct the causes of outages and improper operation. Makes emergency cut-outs and substitutions and power lines and equipment, sometimes working on distribution systems when they are energized.

In addition the incumbent performs a variety of tasks such as repairing electrical auxiliary equipment in the boiler, refrigeration and incinerator plants. Performs these duties and other related duties as assigned by line supervision.

Skills and Knowledge

The incumbent applies comprehensive and broad trade knowledge of electrical principles, elements and systems operation. Has the ability to install, repair and maintain commonly used electric power generating and distributing equipment, trues commutators and slip rings of rotary equipment while turning in their bearings, using dressing stones, under cutters, and grinders; replaces and adjust mechanical contacts and tripping and time-delay intervals of circuit breakers and relays using feelers gauges, dressing tools and timing devices; selects method of installation and repair to assure proper and safe operation of the distribution system, using knowledge of equipment capability, and of modifying factors such as local operating conditions.

The incumbent has knowledge of electrical theory such as power factor, transformers, series and parallel circuits, line loading, line losses, and dielectric or conductive properties of materials. Has the ability to plan and carry through almost all, including the most difficult and complex, operations in the troubleshooting and repair of high voltage controlling and distributing systems such as repairing switch gear, installing and connecting transformers, locating defects in cables, selecting materials to make installations and repairs, uses instruments such as insulation resistance "megger" or oscillator and tone detector to locate faults in underground cables. He/she is able to troubleshoot malfunctions resulting from multiple deficiencies in several components rather than just one readily identifiable defect. Has the ability to read and understand circuit diagrams for generators, busses, switches, circuit breakers, transformers and distribution systems so that problems can be determined and corrective action taken.

The incumbent must have a thorough understanding and knowledge of various test procedures to enable him to test the various devices and equipment on the system. This knowledge is necessary to enable him to make precise and knowledgeable statements and reports while inspecting various equipment. The down time on the high voltage system must be kept to the absolute minimum. Unscheduled outages cannot be tolerated.

Other Significant Factors

Due to the size, complexity, uniqueness and criticality of the NIH's operations, the incumbent may need to perform additional duties, applying more skill, knowledge and responsibility than that of a journeyman high voltage electrician. This position requires the incumbent to exercise an unusually high degree of knowledge and skill in performing the tasks detailed earlier. Additionally, many times the work will involve components that are prototype, or of a unique or otherwise unusually complex design. These situations require the application of his/her broad experience, knowledge and sound judgement usually surpassing the normal trade knowledge of an ordinary journeyman. The importance of the assignment requires the incumbent to stay current on the latest technological changes and updates in the trade. Also, the knowledge, skill

and judgement possessed are used providing technical guidance and assistance to lower graded workers.

Supervision and Guidance Received

The incumbent usually receives work assignments from the Electrician (HV) Supervisor but may also receive instructions from other line supervisors. Tasks are usually assigned by the supervisor in the form of verbal instructions but they may also be in written form and are general in nature. Expected to accomplish the assignment without immediate guidance or instruction. Performs his work using his own judgement, work techniques and informational resources. Work and effectiveness is spot checked by his supervisor through casual observations, occasional inspection, and informal reports from other line supervisors. In time of an emergency, incumbent is expected to use judgement and react properly to any situations that should arise to keep the Central Plant and the high voltage electrical systems in operation.

Physical Efforts

Incumbent works both indoors and outdoors. He is required to be on his feet most of the tour of duty; the work requires considerable walking, climbing ladders, bending, stooping and crawling to inspect equipment. He kneels, stoops, crouches, and stands for long periods of time. He must be well coordinated in using his eyes, hands, legs, and body installing, repairing and testing electrical equipment in confined spaces and awkward locations.

Working Conditions

Incumbent works on and around equipment operating at high voltage. Is exposed to various degrees of temperature, to grease, oil, fumes, dirt and dust. At times is required to work in awkward and cramped positions. A majority of the working time is spent in high voltage vaults or around electrical equipment that is energized. Handles oil (transformer coolant, PCB) and compounds which may be toxic and difficult to safely work with.

In order to have switchgear and other control items available for testing and related work, it may be necessary to do work at night or on weekends. Therefore, working hours and days for personnel assigned to this shop may change according to work requirements and circumstances encountered in the buildings. At times, incumbent may be assigned to a rotating shift.

Position Description

Labor Category/FLSA: Nonexempt

_____ **Current or** __X__ **Proposed Specific Description**

Date Prepared: 07/03/03

Approving Official: **Name:** H. Paul Busch **Signature:** H. Paul Busch
Title: HR Specialist

Position Title/Series/Grade: High Voltage Electrician, WG-2810-10

References: FWS Job Grading Standard for High Voltage Electrician, 2810, dated May 1995

Title and Series Determination: The incumbent works at the journeyman level applying proper work methods to accomplish assigned tasks. Also, he/she ensures availability of necessary materials, tools, and technical instructions. Some work is performed in high voltage electric vaults, substations, and on underground and overhead high voltage distribution systems. Installs, tests, repairs, and maintains generators, transformers, relays, regulators, switches, circuit breakers, recording instruments, control systems and other circuit elements. Also, conducts repairs and maintenance on asynchronous and induction motors, motor generators, protective relays, high voltage circuit breakers, telemetering equipment, rigid conduits, and conductors. Incumbent repairs electrical auxiliary equipment in the boiler, refrigeration and incinerator plants. The performance of these duties and the knowledge and skill necessary is illustrative of those detailed in the referenced standard. The title dictated by the standard at this grade is High Voltage Electrician.

Grade Level Determination: The skill and knowledge to successfully perform these duties is found at the grade 10 level in the standard. The responsibility and physical effort required, as well as the working conditions are also found at the grade 10 level in the standard. This justifies the proper classification as High Voltage Electrician, WG-2810-10.

Electrician (High Voltage)
WG- 2810 - 10

Introductory Statement:

The Division of Property Management (DPM) serves all of the NIH Community by providing support for renovations, new construction and maintenance of existing facilities, utilities and grounds. The Division provides professional leadership for the engineering programs of the National Institutes of Health (NIH). The scope of DPM operations is such that the effectiveness with which they are carried out has a major and direct effect on the worldwide biomedical research programs of the NIH. In addition to the main facilities at the Bethesda Campus and in Poolesville, MD, NIH has facilities at Research Triangle Park, North Carolina, Rocky Mountain Laboratory in Montana and the Gerontology Research Center in Baltimore, MD.

This position is organizationally located within the DPM in one or more of the subordinate organizational components responsible for the provision of operations and maintenance of NIH facilities. The position requires the incumbent to be flexible in the types and complexity of work performed. The position requires that the incumbent be able to work independently and take the initiative to complete the work assigned with a minimum of direct supervision regardless of the nature of the work thus requiring that specific trade skills be shared between staff members.

Major Duties and Responsibilities:

Works at the journeyman level and is able to apply proper work methods involved in accomplishing an assigned task. Makes sure that necessary materials, technical instructions and tools are available to accomplish the task. Obtains required information or decisions from the supervisor on problems that come up during planning or performance of the work. Knows when to seek supervisor assistance in applying proper procedures, policies, written instructions and other directives in completing an assigned task.

Incumbent installs, tests, repairs and maintains generators, transformers, relays, regulators, switches, circuit breakers, recording instruments, control systems and other circuit elements. Works in high voltage electric vaults and substations, and on underground and overhead high voltage primary distribution systems.

Incumbent dismantles, repairs and assembles asynchronous and induction motors, motor generators, protective relays, and high voltage circuit breakers. Cleans, adjusts, and repairs electrical equipment such as air circuit breakers and remotely controlled supervisory and telemetering equipment. Installs rigid conduits. Pulls in conductors, assembles bus bars, phases out and connects conductors. Troubleshoots distribution circuits and controlling equipment to locate and correct the causes of outages and improper operation. Makes emergency cut-outs and substitutions and power lines and equipment, sometimes working on distribution systems when they are energized.

Incumbent performs a variety of tasks such as repairing electrical auxiliary equipment in the boiler, refrigeration and incinerator plants. Performs these duties and other related duties as assigned by line supervision.

Supervision and Guidance Received

The incumbent receives work assignments from the Electrician (HV) Supervisor. Tasks are usually assigned by the supervisor in the form of verbal instructions but they may also be in written form and are specific to the task. Expected to accomplish the assignment without immediate guidance or instruction. Performs his work using industry acceptable work techniques and informational resources. Work and effectiveness is checked by his supervisor through observations, inspection, and informal reports from other line supervisors. In time of an emergency, incumbent is normally expected to use judgement and react properly to routine situations that may arise to keep the Central Plant and the high voltage electrical systems in operation.

Other Significant Factors

The incumbent applies comprehensive trade knowledge of electrical principles, elements and systems operation. Has the ability to install, repair and maintain commonly used electric power generating and distributing equipment, trues commutators and slip rings of rotary equipment while turning in their bearings, using dressing stones, under cutters, and grinders; replaces and adjust mechanical contacts and tripping and time-delay intervals of circuit breakers and relays using feelers gauges, dressing tools and timing devices; selects method of installation and repair to assure proper and safe operation of the distribution system, using knowledge of equipment capability, and of modifying factors such as local operating conditions.

The incumbent has knowledge of electrical theory such as power factor, transformers, series and parallel circuits, line loading, line losses, and dielectric or conductive properties of materials. Has the ability to plan and carry through most operations in the troubleshooting and repair of high voltage controlling and distributing systems such as repairing switch gear, installing and connecting transformers, locating defect in cables, selecting materials to make installations and repairs, uses instruments such as insulation resistance "megger" or oscillator and tone detector to locate faults in underground cables. Has the ability to read and understand circuit diagrams for generators, busses, switches, circuit breakers, transformers and distribution systems so that problems can be determined and corrective action taken.

The incumbent must have a understanding and knowledge of routine test procedures to enable him to test the standard devices and equipment on the system. This knowledge is necessary to enable him to make precise and knowledgeable statements and reports while inspecting various equipment. The down time on the high voltage system must be kept to the absolute minimum. Unscheduled outages cannot be tolerated.

Physical Efforts

Incumbent works both indoors and outdoors. He is required to be on his feet most of the tour of duty; the work requires considerable walking, climbing ladders, bending, stooping and crawling to inspect equipment. He kneels, stoops, crouches, and stands for long periods of time. He must be well coordinated in using his eyes, hands, legs, and body installing, repairing and testing electrical equipment in confined spaces and awkward locations.